REMARKS

The Office Action rejected Claims 1-23 under 35 U.S.C. § 101 as being directed to non-statutory subject matter. Applicant has amended the Claims to overcome the rejection, including canceling claims 16, 19, and 22, and respectfully request that the rejection be withdrawn.

The Office Action rejected Claims 1-23 under 35 U.S.C. § 112 as being indefinite. Applicant has amended the Claims to overcome the rejection, including canceling claims 16, 19, and 22, and respectfully request that the rejection be withdrawn.

The present invention replaces modules in an input TS Packet Stream and outputs the resulting output TS Packet Stream at the same bit rate even when the number of packets in each replacement module is different from the number of packets in the original packet. In one embodiment, replacement object packets, which are the original packets in the input TS packet stream 41 are identified and replaced with post-replacement packets with excess replacement object packets not being reproduced. For example, as seen in FIG. 4, replacement object packets 400 – 402 are replaced by TS packets 450 – 455 (which are post-replacement packets 500 – 505 in FIG. 5). (Pg. 52, ln. 9 – Pg. 57, ln. 24) However, since TS packets 450 – 455 has 6 packets, while replacement objects 400 – 402 has only 3 packets, replacement object packets 407 – 409 are excess packets and not reproduced as TS packets. (Pg. 58, ln. 1 – Pg. 61, ln. 9) Instead, the non-replacement object packet 403 – 406 are stored during the production of TS Packets 453 – 456, and reproduced without change as TS packets 456 – 459. This is accomplished through the use of a replacement excess count maintained by the module replacement unit 102 as shown in FIGS. 1, 6A and 6B. By skipping the reproduction of replacement objects 407 – 409, the bit rate

of the output TS packet stream 42 can maintain the same bit rate output as the input TS packet stream 41. (Pg. 61, lns. 10 – 21)

The Office Action rejected Claims 1-23 under 35 U.S.C. § 103 as being obvious over *Lu* (U.S. Patent App. No. 2002/0147990) in view of *Devara* (U.S. Patent App. No. 2002/0144260).

Lu is directed towards preventing too much data from being sent on a limited bandwidth, which can lead to unwanted data loss. (¶ 0005) In *Lu*, a data stream is analyzed to determine a frequency of replaceable packets and null packets to ascertain an available bandwidth within a fixed bandwidth for digital broadcasting. The available bandwidth is used to determine an insertion rate of new data packets to replace the replaceable packets and null packets. (Abstract)

Devara is directed towards enabling timely delivery of data and maximum utilization of available bandwidth without disturbing the broadcast stream in a destructive manner. (¶ 0005) *Devara* teaches periodically sampling of bandwidth utilization together with information regarding upcoming programming changes. The available bandwidth estimate is employed to prioritize and schedule data insertion within the transport stream. (¶ 0006) The scheduling of the data insertion is based upon the predicted available bandwidth and the required/desired bit rate for the particular data stream and is done to ensure that the particular data stream can utilize the required/desired bit rate. (¶ 0023)

As can be appreciated, *Lu* and *Devara* are directed towards an apparatus which uses predictive data insertion by predicting the bandwidth available. In contrast, the present invention is directed towards an apparatus which uses reactive data insertion by reacting to the incoming replacement objects.

Neither *Lu* nor *Devara* teach or suggest wherein "the data stream is transmitted by a carousel transmission method." There is no indication that Lu utilizes the carousel transmission

method. This is especially true since *Lu* needs ascertains the available bandwidth of replaceable packets and null packets prior to insertion of the new packets. (Abstract) In a carousel transmission, the bandwidth is static and does not change over time. Thus, there would be no need to ascertain the available bandwidth for data insertion ahead of time. Likewise, *Devara* also does not utilize the carousel transmission because it too teaches that available bandwidth should be predicted/estimated ahead of data insertion. (Abstract) Again, data prediction/estimation would be unnecessary if a carousel transmission method were used.

In contrast, in the present invention, the DSM-CC data carousel transmission method is used to transmit the TS packet streams. (Pg. 37, lns. 18 – 20). Advantageously, as seen in FIGS.1, 4, and 6A – 6B, there is no need to calculate the available bandwidth prior to data insertion. Instead, the present invention is reactive and data insertion can be accomplished as the packets are received without prior knowledge of the available bandwidth using a replacement excess counter to maintain the same bit rate.

Lu and *Devara* also do not teach or suggest:

> the output control unit, when a reference time is defined as a time when a total number of units of data constituting the replacement data having been output becomes equal to a total number of units of data constituting the replacement object data having been received, makes a comparison between (i) a total number of units of data constituting the replacement object data that have been received during a time period from a newest reference time to a current time and (ii) a total number of units of data constituting the replacement data that have been output during the time period, outputs the non-replacement-object data when (ii) the total number of units of data constituting the replacement object data is larger than (i) the total number of units of data constituting the replacement object data, and outputs the replacement data when (ii) the total number of units of data constituting the replacement data is no larger than (i) the total number of units of data constituting the replacement object data.

In *Lu*, video processor 320 is different from the output control unit of the present invention. Video processor 320 predicts the bandwidth available for packet insertion from a fixed bandwidth by analyzing the number of packets that have already been received. Video processor 320 then inserts the inserted packets to replace the replaceable packets and the null packets. However, video processor 320 does not count the number of replaceable objects received in relation to the number of replacement data output to determine if there's an excess number of replacement data output because *Lu* is not reactive. In fact, *Lu* teaches away from being reactive and expressly disclose it as being undesirable. *Lu* notes that reactive systems are undesirable because too much data can be sent by the stock ticker web site. (¶ 0005) Thus, *Lu* teaches away from the present invention.

> The *KSR* Court noted that obviousness cannot be proven merely by showing that the elements of a claimed device were known in the prior art; it must be shown that those of ordinary skill in the art would have had some "apparent reason to combine the known elements in the fashion claimed."
>
> In the same way, when the prior art teaches away from the claimed solution as presented here, obviousness cannot be proven merely by showing that a known composition could have been modified by routine experimentation or solely on the expectation of success; it must be shown that those of ordinary skill in the art would have had some apparent reason to modify the known composition in a way that would result in the claimed composition.

Ex parte Whalen et al., Appeal 2007-4423, slip op. at 16 (B.P.A.I. July 23, 2008) (citing *KSR Int'l Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1741 (2007)).

Also, video processor 320 does not skip the output of replacement data corresponding to the replaceable objects when there is an excess number of replacement data output. Video processor 320 also does not output the non-replacement-object when there is an excess number of replacement data output. That is because in *Lu* there is no concern regarding an excess

number of replacement data output since *Lu* does not teach using the data carousel transmission method. Likewise, video processor 320 does not output the replacement data when there is no excess replacement data output.

In addition the bandwidth prediction is not based upon the same time period as the present invention. In the present invention, the time period is defined as "from a newest reference time to a current time" and the reference time is defined as "as a time when a total number of units of data constituting the replacement data having been output becomes equal to a total number of units of data constituting the replacement object data having been received." In *Lu* the bandwidth prediction does not start when the "total number of units of data constituting the replacement data having been output becomes equal to a total number of units of data constituting the replacement object data having been received." Instead, the bandwidth prediction is arbitrarily based on preceding packets without regards to whether the number of replacement objects received matches the number of replacement data sent.

In *Devara*, the data scheduler 203 also is not the output control unit of the present invention since the data scheduler again only inserts data based on the predicted bandwidth. Since *Devara* is predictive and not reactive, it does not use the data carousel transmission method. Thus, *Devara* does not determine whether there is an imbalance with respect to the number of replacement object received when compared to the number of replacement data output. Also, in *Devara* the bandwidth prediction is not based on the same time period as the present invention.

In contrast, in the present invention, a differential between number of replacement object received and the number of replacement data output (post replacement packet) is stored as

replacement excess count. (Pg. 47, lns. 14 – 18) The establishment of the replacement excess count is disclosed in the claim language:

> the output control unit . . .makes a comparison between (i) a total number of units of data constituting the replacement object data that have been received during a time period from a newest reference time to a current time and (ii) a total number of units of data constituting the replacement data that have been output during the time period . . . .

When the replacement excess count is greater than 0, then more replacement data has been output than replacement object received. Thus, there is a need to skip the output of replacement data corresponding to some replacement objects when the replacement excess count is greater than 0 in order to balance the number of replacement objects received and the number of replacement data outputted.

For example, replacement objects 407 – 409 are skipped in FIG. 4. Instead, non-replacement-object is outputted as packets 457 – 459. (Pg. 59, ln. 5 – Pg. 61, ln. 21) Conversely when the replacement excess count is equal to 0, the number of replacement object received is equal to the number of replacement data output and when a replacement object such as replacement objects 410 - 412 are received, a corresponding replacement data can be output such as replacement data 460 - 462. (Pg. 61, ln. 22 – Pg. 62, ln. 21)

Applicant submits that any combination of references that must be modified beyond their functions is suggestive of an unintended use of hindsight that may have been utilized to drive the present rejection. This is particularly true for an Examiner who is attempting to provide a diligent effort that only patentable subject matter occurs. The *KSR* Guidelines do not justify such an approach. There is still a requirement for the Examiner to step back from the zeal of the examination process and to appreciate that a Patent Examiner has to wear both hats of

advocating a position relative to the prior art while at the same time objectively rendering in a judge-like manner a decision on the patentability of the present claims.

As set forth in MPEP 2142,

> To reach a proper determination under 35 U.S.C. §103, the examiner must step backward in time and into the shoes worn by the hypothetical "person of ordinary skill in the art" when the invention was unknown and just before it was made. In view of all factual information, the examiner must then make a determination whether the claimed invention "as a whole" would have been obvious at that time to that person. Knowledge of applicant's disclosure must be put aside in reaching this determination, yet kept in mind in order to determine the "differences," conduct the search and evaluate the "subject matter as a whole" of the invention. The tendency to resort to "hindsight" based upon applicant's disclosure is often difficult to avoid due to the very nature of the examination process. However, impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art.

All arguments for patentability with respect to Independent Claim 1 are repeated and incorporated herein for Independent Claims 13, 14 – 18, 20, 21, and 23.

With respect to Claim 2, *Lu* and *Devara* also fail to teach or suggest

> a data output sub-unit operable to output the replacement data if it is found as a result of the comparison by the comparing sub-unit that the total number of units of data constituting the replacement data that have been output during the time period is no larger than the total number of units of data constituting the replacement object data that have been received during the time period.

There is no indication in *Lu* that it discloses the data output sub-unit of the present invention which the replacement data is output only when the number of replacement data output in a specific time period is no larger than the number of replacement object received than the specific time period. The Office Action on Pages 6 and 7 cite to the prioritization/scheduling of data insertion based on the predicted/estimated future available bandwidth in *Devara* for the features of the present invention. However, the scheduling unit only predicts the future

bandwidth available and does not restrict output of the replacement data to situations where the number of replacement data output is no larger than the number of replacement object received during the time period. Furthermore, the bandwidth prediction is not based upon the same time period as the present invention.

In Claim 1 of the present invention, which Claim 2 is dependent upon, the time period is defined as "from a newest reference time to a current time" and the reference time is defined as "as a time when a total number of units of data constituting the replacement data having been output becomes equal to a total number of units of data constituting the replacement object data having been received." In *Devara* the bandwidth prediction does not start when the "total number of units of data constituting the replacement data having been output becomes equal to a total number of units of data constituting the replacement object data having been received."

In contrast, in the present invention, when the program is activated, the replacement excess count is "0" meaning that there is an equal number of replacement objects received as replacement data (post-replacement packets) output. (Pg. 47, lns. 11 – 18) In Step S612 a judgment is made regarding whether the replacement excess count is larger than "0" or in other words whether there are more replacement data output than replacement object received. If the replacement excess count is not larger than "0", meaning the number of replacement data output is no larger than the number of replacement object receive, then the replacement data is output. (Pg. 49, lns. 7 – 22) Otherwise, the replacement data is skipped and instead the non-replacement-object in the queue is output.

With respect to Claim 4, neither *Lu* or *Devara* disclose

> a calculating sub-unit operable to calculate a replacement insufficiency count value by subtracting (i) the total number of units of data constituting the replacement data that have been

> output during the time period from (ii) the total number of units of data constituting the replacement object data that have been received during the time period.

The Office Action on pages 7 – 8 cited to paragraphs 29 to 38 in Lu for the features of the present invention. *Lu*, however, only calculates the number of replacement packets available in a preceding period of time to determine the bandwidth. It does not take the number of replacement packets available and subtract from it the replacement data that has already been output. *Devara* also does not remedy the deficiencies of *Lu*.

With respect to Claim 11, *Lu* and *Devara* fail to teach or suggest the

> data output sub-unit operable to, if one or more replacement excess count values calculated by the output control unit are smaller than "0", and if any priority level assigned to a type of replacement data corresponding to a replacement excess count value smaller than "0" is no smaller than a priority level assigned to the non-replacement-object data, output a type of replacement data which should be output.

The Office Action on Pages 11 – 12 cite to the weighting factor a(k) for each of the M most recently viewed original data packets in *Lu* for the feature of the priority level. However, the weighting factor is used to predict the amount of bandwidth available, or how much space is available for future transmission, and not the priority level of the packets to be transmitted, or which of the packets should be transmitted next. (¶ 0039) *Devara* also fails to remedy the deficiencies of *Lu*.

In contrast, in the present invention, in one embodiment, priority levels are assigned to replacement data (replacement object packet) and non-replacement-object data (non-replacement-object packet). The module replacement unit 502 compares the priority levels of the replacement data and the non-replacement-object data and outputs the one with the higher priority level. (Pg. 120, ln. 14 – Pg. 121, ln. 2)

With respect to Claim 13, *Lu* and *Devara* do not disclose wherein "the replacement data is composed of replacement-purpose data, which is constituted from N units of data and dummy data, where $M \geq N$." While *Lu* indicates that the inserted packets can take the place of replaceable packets and null packets, there is no indication in *Lu* that the inserted packets include null packets. (¶¶ 0028, 0030) There would be no reason for *Lu* to insert null packets since *Lu* is not concerned with maintaining the output bit rate to be the same as the input bit rate. Furthermore, since there are already null packets in the incoming digital data transport stream 200, it would make little sense for the apparatus in *Lu* to remove and reinsert null packets. Likewise in *Devara*, the replaceable packets can be null packets. Thus, *Devara* would not remove and reinsert null packets.

In contrast, in the present invention, the replacement data which is outputted to replace the replacement object can include data and null data (dummy data). As seen in FIG. 10, the replacement data includes null data when there is a higher number of replacement object (replacement object module) received than replacement data (post-replacement module) output. (Pg. 77, lns. 21 – 23) By outputting null data, a bit rate in which the replacement object was received can be maintained for outputting the replacement data. (Pg. 64, ln. 21 – Pg. 65, ln. 4)

Dependent Claims 2 – 12 depend from and further define Claim 1 and are thus allowable, too.

If there are any questions with regards to prosecution of the present case, the undersigned attorney can be contacted at the listed telephone number.

Very truly yours,

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